



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,254	09/26/2003	Jens-Christian D. Meiners	UOM 0275 PUSP	8836
22045	7590	10/05/2005	EXAMINER	
BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			ORTIZ, ANGELA Y	
			ART UNIT	PAPER NUMBER
			1732	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,254

Applicant(s)

MEINERS ET AL.

Examiner

Angela Ortiz

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by admitted prior art as set forth on pages 1-3 of the instant specification.

The admitted prior art substantially teaches the basic claimed process and device that results from the process of molding a microfluidic device having at least one interconnect comprising an elastomeric portion, a substrate and the interconnect connected to the elastomeric portion wherein the elastomeric portion and the substrate together define a fluid passage. See pages 1-3 of the instant specification.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 21-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art as set forth on pages 1-3 of the instant specification, in view of Bauer, USP 4,304,749 (of record).

The admitted prior art substantially teaches the basic claimed process of molding a microfluidic device having at least one interconnect comprising an elastomeric portion, a substrate and the interconnect connected to the elastomeric portion wherein the

Art Unit: 1732

elastomeric portion and the substrate together define a fluid passage. See pages 1-3 of the instant specification.

However the admitted prior art requires baking and does not set forth a curable contracting resin as claimed.

The added secondary reference teaches as conventional the feature of forming a fluidic structure using a polymeric material that does not require baking, having contracting properties as claimed. A cover 23 and substrate 23 are provided adjacent one another such that there is provided a fluid passage therebetween. A thermoset plastic resin is injected into the mold cavity to encapsulate the assembly, such that it contracts upon solidification. See col. 5, lines 1-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to so provide a contractable resin as shown in the added reference, when performing the process set forth in the admitted prior art, for avoiding baking of the resin, and for achieving an encapsulated device securely assembled.

Note that new claim 21 does not require the "further elastomeric portion", and thus the previous rejection remains applied.

With respect to claims 22-25, note that the admitted prior art shows a glass substrate, and fluid tubing; note that the tubing claimed in claims 23-25 are deemed functional equivalents of one another; should applicant argue that such are not, a species election will be required.

With respect to claims 26-27 and 28-29, these claims are deemed obvious alternatives; should applicant argue that such are not, a species election will be

Art Unit: 1732

required; note that the resins claimed are equivalent to those materials disclosed in the applied prior art.

With respect to claim 32, note that both references teach the limitation claimed; see for example, the added reference, figure 3.

With respect to claim 33, note that the added reference shows a two-part frame in figure 3.

With respect to claims 30-33, note that the Bauer reference teaches a liquid resin at col. 5, lines 15-25 and sets forth an alternative embodiment to injection molding in a mold, wherein use of a mold is avoided by flowing injected material into holes in the assembly and forming rivets, so that the same effect is achieved. See col. 3, lines 27-42 and col. 4, lines 25-65. See also col. 2, lines 50-60 wherein the encapsulating resin may be the same material as the body (which is thermoset). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a liquid resin and pouring as claimed, in view of the Bauer reference, for using the same material and achieving an integral molding avoiding unneeded adhesives, and avoiding the use of a mold, which may be cumbersome, and form rivets to achieve the same result. Note that the disclosed thermoplastic resins are curable and are equivalent alternatives to the liquid curable resin material as claimed.

Response to Arguments

Applicant's arguments and the declaration by applicant filed September 12, 2005 have been fully considered but they are not persuasive.

Art Unit: 1732

Applicant is urged to specifically respond to the argument regarding the admitted prior art – the response is considered very important to the prosecution of this application..

Applicant argues that the related art discussed is not prior art - but admits that figures 1 and 2 are prior art - it is not understood how the pages 1-3 which include a description of figures 1 and 2, and the phrase 'such devices are well known' as cited at page 1, line 17 is not admitted prior art, or how the discussion of the device, admitted to be well known, be considered different from what is old, known or conventional in the art and not applicant's own invention.

Applicant argues that the combination does not render the claims obvious because the Bauer device is directed to macrofluidic devices, and does not teach a curable resin to solve the problem of encapsulating a microfluidic device in a thermosetting resin which contracts, but uses thermoplastic resin materials.

It is the Examiners position that the level of ordinary skill in the art of fluidic devices also includes well-versed knowledge in microfluidic devices, and that both are in the same field of endeavor. With respect to the use of Bauer, note that it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the field of endeavor of the Bauer reference is fluidic devices, which alone is pertinent enough to the claimed method. However, the reference also sets forth a method that is

Art Unit: 1732

reasonably pertinent to the particular problem with which the applicant was concerned, namely, assembling fluidic devices wherein "the plastic shrinks on cooling and binds the cover plate and body member together in sealing relation", see col. 1, lines 60-65 and col. 3, lines 42-55. One of ordinary skill in the art would certainly have been motivated to look to Bauer for sealing the fluidic devices set forth in the admitted prior art, for achieving a sealed assembly.

With respect to the argued limitation of "curable resins", note curable resins are not limited to thermosetting resins. Thus the Bauer reference is pertinent and remains applied. Note further, applicant has not recited in the rejected claim(s) the limitation of 'thermoset' resins, and although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Note that Bauer further sets forth a choice in sealing materials, and describes at col. 2, lines 47-60 and col. 5, lines 15-20, the use of cross-linkable resins as well as the same resin material for all three parts (cover plate, body member and injected material).

Applicant argues that Bauer's use of 'high pressure' injection molding and the molding temperature of the plastic would distort the product being sealed and other defects.

Note that 'high pressure' injection molding is not disclosed in the reference; and while molten resin is preferred, care is taken not to damage the part being encapsulated at col. 2, lines 50-55 and col. 5, lines 20-25 wherein it is suggested to use a plastic of lower melt temperature to avoid damage. Note also col. 1, lines 45-65 and col. 4, lines

Art Unit: 1732


25-35 wherein a mold is avoided for achieving the molding of the plastic, thus avoiding 'high pressure' injection molding as argued.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela Ortiz whose telephone number is 571-272-1206. The examiner can normally be reached on Monday-Thursday 9:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Angela Ortiz
Primary Examiner
Art Unit 1732

ao